Shri Mata Vaishno Devi University
Department of Computer Science & Engg.
MINOR-I

Subject: Computer Networks & Communication
Course Code: CSL 3017
Duration: 1 Hr.
Date: 31.01.2018
(Total Marks 20)

Short-Answer Questions: [1 x 6]

(a) Why does ATM use small, fixed-length cells?
(b) Does the Novell Netware architecture look more like X.25 or like TCP/IP?
(c) Why has a speed of 155 Mbps been chosen for transmitting ATM transmission?
(d) How much bandwidth is there in 0.1 micron of spectrum at a wavelength of 1 micron?
(e) What is the difference between Baseband and Broadband Coaxial Cable?
(f) What is a multimode fiber optic cable?

Q. 2. a) Differentiate between Reliable connection oriented and unreliable connection oriented services in a network using relevant examples of applications. [2+2]

b) Explain in detail, the transactions occurring across the SAP in a layered network architecture model.

Q. 3. a) How is a DQDB (MAN) architecture different from a LAN architecture? [3]

b) What is multicasting? How is it achieved? [2]

Q. 4 List the design issues of Data link layer or Network Layers in the OSI model. [2]

Q. 5. Explain the concept of Digital Bit Pipe as given in N-ISDN. [3]

SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA

B. Tech. (CSE) End Semester Examination (Even) 2017-18

Entry No: 2 9

Date: 15.03.18

Total Number of Pages: [01]

Total Number of Questions: [04]

Course Name: Computer Networks and Communication

Course Code: CSL 3017

Time Allowed: One Hour

Max Marks: [20]

Instructions / NOTE

i. Attempt All Questions.

ii. Support your answer with diagrams / neat freehand sketches, wherever appropriate.

iii. Assume any missing data to suit the derivation / answer.

Q1.	Attempt any FIVE of the following: (a) Data link protocols almost always put the CRC in a trailer, rather than in a header. Why? (b) What is the baud rate of the standard 10-Mbps 802.3 LAN? (c) Explain how mean delay using FDM is N times worse than if TDM is used. (d) What is the job of the protocol field in PPP? What do protocols starting with a 0 indicate? (e) What is trellis coding? (f) What is Quadrature Amplitude Modulation?	[05]
Q2.	(a) A group of N stations share 56-kbps pure ALOHA channel. Each station outputs a 1000-bit frame on an average of once every 100 sec, even if the previous one has not yet been sent (e.g., the stations are buffered.) What is the maximum value of N? (b) List any two points of advantages of slotted ALOHA over PURE ALOHA.	[03] [01]
Q3.	(a) Compare and contrast Protocol using selective repeat with Protocol using go back N. (b) Explain the role of LCP packets in the working of point-to-point protocol. (c) Explain logical ring maintenance in IEEE 802.4 networks.	[02] [02] [02]
Q4.	(a) A 1-km-long, 10-Mbps CSMA/CD (Carrier Sense Multiple Access with Collision Detection) LAN (not 802.3) has a propagation speed of 200 m/μsec. Repeaters are not allowed in this system. Data frames are 256 bits long, including 32 bits of header, checksum, and other overhead. The first bit slot after a successful transmission is reserved for the receiver to capture the channel in order to send a 32-bit acknowledgement frame. What is the effective data rate, excluding overhead, assuming that there are no collisions. (b) Consider building a CSMA/CD network running at 1 Gbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?	[03] [02]

SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA
School of Computer Science & Engineering
B. Tech. (CSE) Major Examination (Even) 2017-18

Entry No: | | | | | | | | | |

Date: 07.05.18

Total Number of Pages: [02]

Total Number of Questions: [07]

Course Title: Computer Networks & Communications

Course Code: CSL 3017

Time Allowed: 3.0 Hours

Max Marks: [50]

I. Attempt All Questions
II. Support your answer with neat freehand sketches/diagrams, wherever appropriate
III. Assume any missing data to suit the case / derivation / answer

Section - A

Q1. (a) You want to browse a page http://www.nytimes.com,what application layer protocol besides HTTP is needed? DNS [01]

(b) What are the fields in TCP header format? [01]

(c) 802.11 specifies a spectral mask defining the permitted power distribution across each channel. What is the significance of this mask? [01]

(d) How can you make your server a Domain? [01]

(e) How does bit map protocol operate? [01]

(f) Why are single-mode fibers used for large distance communications rather than multi-mode fibers? [01]

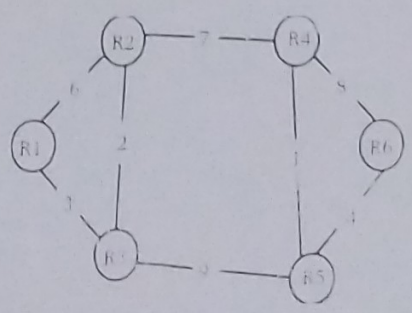
(g) What is SNMP inform? [02]

Q2. (1.) Consider a reliable data transfer protocol that uses only negative acknowledgements. Suppose the sender sends data only infrequently. Would a NAK-only protocol be preferable to a protocol that uses ACKs? Why? Now suppose the sender has a lot of data to send and the end-to-end connection experiences few losses. In this second case, would a NAK-only protocol be preferable to a protocol that uses ACKs? Why? [04]

(2.) Host A (on TCP/IP v4 network A) sends an IP datagram D to host B (also on TCP/IP v4 network B). Assume that no error occurred during the transmission of D. When D reaches B, which of the following IP header field(s) may be different from that of the original datagram D? Why? [02]

a. TTL b. Fragment Offset c. Checksum

(3.) Consider a network with 6 routers R1 to R6 connected with links having weights as shown in the following diagram: All the routers use distance vector based routing algorithm to update their routing tables. Each router starts with its routing table initialized to contain an entry for each neighbor with the weight of the respective connecting link. After all the routing tables stabilize, how many links in the network will never be used for carrying any data? [03]



Soket
Interface b/w 2 processes

Port
Signifies a gate through which client ~~and server~~ can connect to server.

Consists of IP address Protocol Port No

Every Port has unique Port no. which is in inclusive Range of 1 – 65535

Section - B

Q3. (a) Consider host A uses 32 bytes packets to transmit to host B using SWP. Distance between host A and B is 100,0000 meters and the propagation speed is 2/3 of speed of light. The data rate is 128 kbps. What is the optimal window that host A will use? [03]

(b) Consider the 1 Mbps error free line. The maximum frame size is 1000 bits. New packets are generated about 1 seconds apart. The timeout interval is 10msec.If the ack timer is eliminated. How many times the average message be transmitted. Assume that the one way propagation delay is 10 ms. [02]

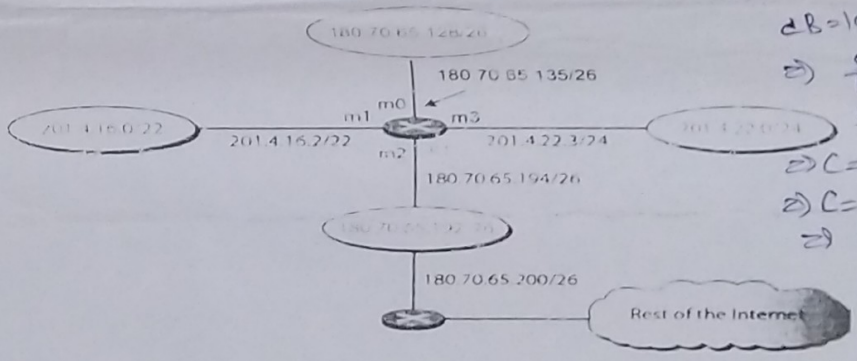
(c) A leaky bucket is at the host network interface. The data rate on the network is 2MByte/s and the data rate on the link from the host to the bucket is 2.5Mbyte/s. Suppose the host has 250 Mbytes to send onto the network and it sends the data in a burst. What should be the minimum capacity of the bucket (in bytes) in order that no data is lost? [04]

Q4. (a.) For a host machine that uses the token bucket algorithm for congestion control, the token bucket has a capacity of 1 mega byte and the maximum output rate is 20 mega bytes per second. Tokens arrive at a rate to sustain output at a rate of 10 mega bytes per second. Token bucket is currently full and the machine needs to send 12 mega bytes of data. What is the minimum time required to transmit the data? [04]

(b) What is the use of Proxy in SNMP? Does it require only when the network has SNMPv1 and SNMPv2? [04]

(c) Find the maximum bit rate for a channel having bandwidth3100 Hz and S/N ratio of 10 db. [02]

Q6 (a) Your IP Address is 10.16.58.92/27. Can you use direct delivery to send messages to the host 10.16.58.129? [02]



$dB = 10\log_{10}\left(\frac{S}{N}\right)$
$\Rightarrow \frac{S}{N} = 10^1$
$SNR = 10$
$\Rightarrow C = B\log_2(1+SNR)$
$\Rightarrow C = 3100\log_2(11)$
$\Rightarrow C = 10.7$ kHz (on solving)

(b) From the figure above:

i. How would you verify that the router address 180.70.65.135/26 on them0 interface is indeed on the network 180.70.65.128/26 ? [02]

ii. Are 180.70.65.128/26 and 180.70.65.192/26 two different networks…i.e., are these really two non-overlapping blocks of addresses? [02]

180.70.65.128/26 = 10110100 01000110 01000001 10000000
180.70.65.192/26 = 10110100 01000110 01000001 11000000
(same — different bits in subnet)
So NON-overlapping

(c) What is the difference between a Socket and a Port? [02]

Q7. (a). An image is 1024 x 768 pixels with 3 bytes/pixel. Assume the image is uncompressed. How long does it take to transmit it over a 56-kbps modem channel? Over a 1-Mbps cable modem? Over a 10-Mbps Ethernet? Over 100-Mbps Ethernet? [02]

An image is $1024 \times 768 \times 3 \times 8 = 18,874,368$ bits
With 56,000 bps, Time $= \frac{18,874,368}{56,000} = 337.04$ sec [04]

(b) An IP router with a Maximum Transmission Unit (MTU) of 1500 bytes has received an IP packet of size 4404 bytes with an IP header of length 20 bytes. What are the values of MF bit, Datagram length and Offset in the header of the third IP fragment generated by the router for this packet?

(23)

Course Outcomes:

After Successful Completion of this Course, students shall be able to

(1) To be familiar with the issues in networking technologies

(2) Identify deficiencies in existing protocols, and then formulate new and better protocols.

(3) Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and

SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA
School of Computer Science & Engineering
B. Tech (CSE) Minor#1 Examination (Even) 2018-19

Entry No: 1 7 B C S 0 4 5
Date:

Total Number of Pages: [01]
Total Number of Questions: [05]

Course Title: Computer Network and Communication
Course Code: CSL 3071

Time Allowed: 1.5 Hours **Max Marks: [20]**

Instructions / NOTE

i. Attempt All Questions.
ii. Support your answer with neat freehand sketches/diagrams, wherever appropriate.
iii. Assume an appropriate data / information, wherever necessary / missing.

Q1.	(i) Identify the layers of OSI model for each of the following responsibilities. (a) Logical Addressing (b) Message segmentation and reassembly (c) Service-point addressing (d) synchronization of bits (ii) What is the role of glass cladding in Fiber cable? (iii) Mention the size of following **in bits**: (a) IPv4 address (b) IPv6 address (c) MAC address (d) Port address	[02] [01] [02]	CO1
Q2.	What would be the effect on the network communication if any one link loses/breaks? Provide justification for each physical topology used in networks.	[02]	CO2
Q3.	An Internet Service Provider (ISP) is granted a block of addresses starting with 199.80.220.0/24. The ISP needs to distribute these addresses in following two groups of customers as follows: a. First group has 8 customers; each needs 8 addresses. b. Second group has 16 customers; each needs 8 addresses. Design the sub-blocks for each group of customers. Represent the different customers' subnet along with i/p addresses. Also find out how many i/p address are unallocated.	[05]	CO2
Q4.	Rohan is communicating with his friend using a chat application. Explain different types of addresses which are involved in the communication.	[02]	CO2
Q5.	(i) List-out the different bands of electromagnetic spectrum which are used for communication. Also discuss why these only being used for communication. (ii) Differentiate baseband and broadband coaxial cables. (iii) Discuss ISDN services	[02] [02] [02]	CO1

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Course Outcomes

CO1: Understand computer networking and data communications
CO2: Understand the standard networking models along with their layers and associated applications
CO3: Be familiar with the different concepts of network protocols
CO4: Analyse the features and operations of various protocols

CO	Questions Mapping	Total Marks	Total Number of Students (to be appeared in Exam)
CO1	1, 5	11	50
CO2	2, 3, 4	09	50
CO3			
CO4			

SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA
School of Computer Science & Engineering
B. Tech (CSE) Major Examination (Even) 2018-19

Entry No: 1 7 B C S 0 4 5
Date:

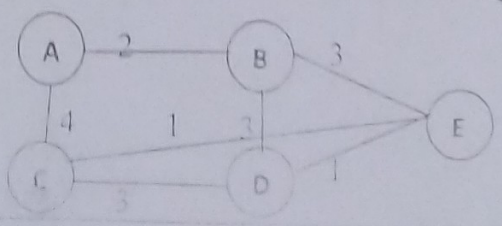
Total Number of Pages: [02]
Total Number of Questions: [07]

Course Title: Computer Network and Communication
Course Code: CSL 3071

Time Allowed: 3 Hours **Max Marks: [50]**

Instructions / NOTE

i. Attempt All Questions.
ii. Support your answer with neat freehand sketches/diagrams, wherever appropriate.
iii. Assume an appropriate data / information, wherever necessary / missing.

Q1.	Choose the best answer from the given options. (i) IEEE standard for Wireless LAN is a) 802.1 b) 802.7 c) 802.15 d) 802.11 (ii) Find out the incorrect representation of IP address. a) 10.1.10.0 b) 111.111.11.255 c) 220.0.0.01 d) 1.0.199.255 (iii) Find out the class of IP address 252.5.15.10 a) Class B b) Class C c) Class E d) Class D (iv) Which of the IP addresses are not private? a) 172.168.0.0 b) 10.0.52.0 c) 10.0.0.0 d) 192.168.0.0 (v) ARP (Address Resolution Protocol) belongs to a) Transport Layer b) Network Layer c) Internet Protocol Layer d) None	[05]	CO1
Q2.	During data communication, a system is using cyclic redundancy check (CRC) for error detection. Find out there is an error or no error if a station has received a frame 101011010. (Assume that generator bits are 101).	[05]	CO2
Q3.	(a) Which of the protocols are used in Transport layer? (b) Write the significance of each along with applications. (c) Which of these protocol is fastest and why? (d) Differentiate the following devices D1) Repeater D2) Hub D3) Switch D4) Router	[06] [04]	CO4
Q4.	Consider three machines A, B and C with IP addresses 100.10.5.2, 100.10.5.5 and 100.10.5.6 respectively. The subnet mask is set to 30 for all the three machines. Justify which of these 3 machine may belong to same subnet.	[05]	CO1
Q5.	A pure ALOHA network transmits 500 bits frame on a shared channel of 1000 kbps. What is the throughput if every system produces 100 frames/sec. Assume that shared channel is used by 5 different stations only.	[05]	CO2
Q6.	Write the short notes on any 5 from the following (a) SNMP (b) Satellite Networks (c) Congestion control (d) HDLC (High-level data link control) Protocol (e) Go-back-N protocol (f) Fiber Cable	[15]	CO3
Q7.	Find the shortest path from source A using distance vector routing protocol. 	[05]	CO4

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Course Outcomes

CO1: Understand computer networking and data communications
CO2: Understand the standard networking models along with their layers and associated applications
CO3: Be familiar with the different concepts of network protocols
CO4: Analyse the features and operations of various protocols

CO	Questions Mapping	Total Marks	Total Number of Students (to be appeared in Exam)
CO1	1, 4	10	50
CO2	2, 5	10	50
CO3	6	15	50
CO4	3, 7	15	50